REMARKS

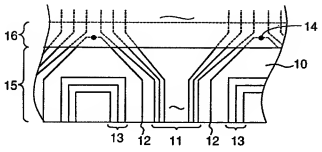
The Examiner is thanked for the very thorough consideration given to the present application. In the previous reply, claims 7-9 and 17-18 were withdrawn. In the present Office Action, claims 1, 5, 6, 12-16 and 19-23 have been rejected. In the present Amendment, claim 21 is amended based on Fig. 4 of the original Drawings. Claims 1, 12, 19 and 21 are independent claims. No new matter has been introduced by the present Amendment. Reexamination and reconsideration of the pending claims are respectfully requested.

Claims 1-3, 5-6, 12-16 and 21 are rejected under 35 USC 103(a) as being unpatentable over Kawaguchi (US 6,052,171, hereinafter "Kawaguchi") in view of Kim et al. (KR 10-1999-0024956, hereinafter "Kim"). This rejection should not include claims 2 and 3 since claims 2 and 3 have been cancelled. Claims 19-20 and 22-23 are rejected under 35 USC 103(a) as being unpatentable over Kawaguchi in view of Kim; further in view of Song et al. (US 2002/0008794, hereinafter "Song"). These rejections are respectfully traversed.

(1) The response to Amendment discussed on page 2 of the Examiner's Office Action mentions that Figure 1A of Kawaguchi just shows a portion of the peripheral part of the liquid crystal panel and therefore, when a full peripheral part is shown, the first and second line-on-glass signal pads will be in between the first gate pad and the first data pad. Further, the Office Action mentions that Kawaguchi discloses a plurality of line-on glass type signal lines as connection line 13 referring to "column 6, lines 60-65"). However, these arguments are respectfully traversed.

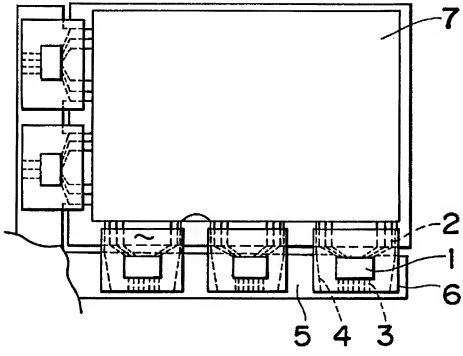
In Fig. 1A of Kawaguchi, the peripheral part 15 is one side of liquid crystal panel 10. That is, the peripheral part 15 corresponds to source line 11 and an upper side or a lower side of quadrilateral liquid crystal panel 10.

Fig.1A



Figs. 1A~1C of Kawaguchi show the TCP and its connection with liquid crystal panel 10 and circuit board 30. The TCPs 6 are formed in the lower side of the liquid crystal panel 10, not in one corner between the first gate pad and the first data pad. Please see Fig. 5 of Kawaguchi. Therefore, the shown peripheral part of Fig. 1A is just one side of the liquid crystal panel 10.

Fig.5 PRIOR ART



(2) In column 6, lines 60~65, Kawaguchi also mentions that the embodiment is applicable to the gate line side, and similar effects can be obtained.

Herein, the gate line side corresponds to the left side or right side of the liquid crystal panel 10, not the one corner between the first gate pad and the first data pad. Thus, Kawaguchi does not teach or suggest the possibility of lines or pads in one corner defined between the first gate pad and the first data pad.

(3) Kawaguchi does not show any LOG type lines or LOG pads. LOG type lines are used to omit gate PCBs. In this case, the present invention discloses that LOG lines and LOG pads are formed in one corner between the first gate pad and the first data pad, and the LOG pads are connected to the first data TCP and the first gate TCP. That is, the gate control signals are directly received from the data PCB through the first data TCP without the gate PCB. However, Kawaguchi is regarding TCP type bonding. In this case, Kawaguchi calls for both the gate PCB and the source (data) PCB to be connected to respective gate and source TCPs.

(4) Therefore, Kawaguchi does not disclose the following features of claim 1:

"a plurality of first line-on glass signal pads formed just beside the first data pad and a plurality of second line-on glass signal pads formed just beside the first gate pad, the first and second line-on glass signals pads are in one corner of the outer area of the picture display part, wherein the one corner of the outer area of picture display part is defined between the first gate pad and the first data pad;,"

"a plurality of line-on glass type signal lines connecting the first and second line-on glass signal pads in the corner of the outer area of the picture display part for applying gate power voltage signals and gate control signals to gate drive ICs in order to drive gate signal lines of the picture display part;,"

"a plurality of first dummy pads between the first line-on glass type signal pads and a plurality of second dummy pads between the second line-on glass type signal pads;" and

"a plurality of dummy lines connecting the first and second dummy pads in the one corner of the outer area of the picture display part, wherein the plurality of first and second

dummy lines are formed between the line-on glass type signal lines for applying a common voltage as a reference voltage to drive the liquid crystal cells with at least one layer of insulating film therebetween, wherein the insulating film covers the plurality of line-on glass type signal lines and the dummy lines are formed on the layer of insulating film."

Also Kim and Song fail to disclose the above features. Accordingly, none of the cited references, including Kawaguchi, Kim and Song, teaches the above features. Accordingly, claim 1 is considered allowable over Kawaguchi, Kim and Song, and claims 5-6, which depend from claim 1 are also considered to be allowable over the cited references.

Similarly as stated above, claim 12 is allowable over Kawaguchi and Kim in that claim 12 recites the following features:

"forming first~ (n)th gate lines in a picture display part and a plurality of line-on glass signal lines in one corner of an outer area of the picture display part on a substrate for applying gate power voltage signals and gate control signals to gate drive ICs in order to drive gate signal lines of the picture display part;

forming at least one layer of insulating film to cover the line-on glass type signal lines; forming first~(m)th data lines to cross the first~ (n)th gate lines in a picture display part and a dummy line that is located between the line-on glass signal lines on the insulating film for applying a common voltage as a reference voltage; and

forming first~(m)th data pads extended from the first~(m)th data lines and first~ (n)th gate pads extended from the first~ (n)th gate lines in the outer of the picture display part and forming first and second line-on glass signal pads just beside the first data pad and first gate pad, respectively and first dummy pads between the first line-on glass signal pads and second dummy pads between the second line-on glass pads, respectively, in one corner of the outer area of the picture display part, wherein the one corner of the outer area of picture display part is defined between the first gate pad and the first data pad, wherein each of the plurality of the line-on glass signal lines is connected between the first and the second line-on glass signal pads in the one corner of the outer area of the picture display part."

As stated above, none of the cited references, singly or in combination, teaches or suggests at least these features of the claimed invention. Accordingly, Applicant respectfully submits that claim 12 and claims 13-16, which depend therefrom, are allowable over the cited references.

Claim 19 is allowable over Kawaguchi, Kim and Song in that claim 19 recites the following features:

"a plurality of line-on glass type signal lines located in one corner of the outer area of the picture display part of the lower substrate for applying drive signals to drive the liquid crystal cells, wherein the one corner of the outer area of the picture display part is corresponding to between the gate pad and the data pad;

an insulating layer covering the line-on glass type signal lines; and

a plurality of common voltage signal lines for applying a common voltage signal and being formed between line-on glass type signal lines, on the insulating layer, wherein at least one of the plurality of common voltage lines applies the common voltage signal through a silver(Ag) dot to a common electrode that is formed on an entire surface of an upper substrate" in the claimed invention.

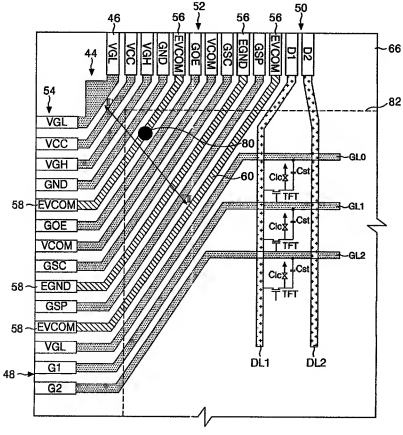
Since, none of the cited references including Kawaguchi, Kim and Song, singly or in combination, teaches or suggests at least this feature of the claimed invention, it is submitted that claim 19 and claim 20 which depends therefrom are allowable over the cited references.

Claim 21 is allowable over Kawaguchi, Kim and Song in that claim 21 recites the following features:

"a plurality of line-on glass type signal lines located in one corner of the outer area of the picture display part of the lower substrate for applying drive gate signals to drive the liquid crystal cells, wherein the one corner is defined between the gate pad and the data pad;" and "a

common voltage line located in the one corner, wherein the common voltage line is most adjacent to the gate pad and the data pad."

In the claimed invention, since the common voltage line is the most adjacent to the gate pad and the data pad (please see Fig. 4, as shown below), resistance of common voltage between the gate pad and the data pad can be reduced and delay of common voltage can be reduced. Therefore, deterioration of the image based on a drop of common voltage can be prevented.



Thus, since the cited references Kawaguchi, Kim and Song, singly or in combination, do not teach or suggest at least the feature of "a common voltage line located in the one corner, wherein the common voltage line is the most adjacent to the gate pad and the data pad" of the claimed invention, the cited references could not possibly suggest the effect thereof.

Accordingly, Applicant respectfully submits that claim 21, and claims 22-23 which depend therefrom, are allowable over the cited references.

In view of the above remarks, it is believed that the present application is in condition for allowance and accordingly favorable action is respectfully solicited.

Conclusion

Since all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot, the Applicants respectfully request that the Examiner reconsider and withdraw all of the present rejections of the claims. Accordingly, it is believed that the present application is in condition for allowance. Thus, favorable consideration of this Amendment is respectfully requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Joseph A. Kolasch, Reg. No. 22,463 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By 

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